

REMARKS

This responds to the Office Action mailed on March 15, 2004.

No claims have been canceled or added by way of this amendment. Claims 1, 9, and 44-58 have been amended. As a result, claims 1-58 are now pending in this application.

For the convenience of the Examiner, Applicant's remarks concerning the claims will be presented in the same order in which the Examiner presented them in the Office Action.

Correcting the Attorney Docket Number

Applicant appointed new attorneys in the paper filed September 10, 2003. Please substitute the new attorney docket number (884.A87US1) for the old attorney docket number (219.40775X00).

Amendments to the Specification

Applicant has corrected a typo in the paragraph beginning on page 6, line 15. No new matter has been added through this amendment.

Amendments to Claims 1, 9, and 44-58

Independent claim 1 has been amended by adding the phrase "comprising a plurality of electrically conductive grid array connectors".

Independent claim 9 has been amended by substituting the phrase "comprising a plurality of electrically conductive grid array connectors, wherein the grid array" for "that".

Support for these two amendments may be found, for example, on page 1, lines 4-5 and in original claim 1. No new matter has been introduced.

The dependency of claims 44-58 has been changed from claim 1 to claim 43.

The amendments to the claims are made to satisfy Applicant's preferences, not necessarily to satisfy any legal requirement(s) of the patent laws, and they are not intended to limit the scope of equivalents to which any claim element may be entitled.

Claim Objections

Claims 44-46 were objected to by the Examiner, who asserted that the meaning of “reserved component area” is unclear. Applicant respectfully asserts that adequate support for “reserved component area” may be found in the original disclosure as filed, e.g. on page 5, line 7; on page 5, line 17; on page 8, line 3; on page 9, line 5; and in original claims 4, 12, 24, and 35.

Applicant further respectfully asserts that the meaning of an example of a “reserved component area 160”, as illustrated in FIGS. 1-4, in both top and side views, and as described in the accompanying written description, should be clearly understood by one of ordinary skill in the art, and Applicant requests that the Examiner withdraw her objection to this term.

Rejection of Claims 1-42 Under 35 U.S.C. §102(e) as Anticipated by Norskov

Claims 1-42 were rejected under 35 U.S.C. §102(e) as being anticipated by Norskov (U.S. 6,608,259). Applicant does not admit that Norskov is prior art and reserves the right to swear behind Norskov as provided for under 37 C.F.R. §1.131.

Norskov discloses a chip 1 (FIG. 1) mounted on an interposer 4, which in turn is mounted on a PCB 10. Ground pads 13, 15 of chip 1 are electrically connected to corresponding structure 14, 11 of interposer 4 via bonding wires 8, 9. Applicant could not find any mention of the terms “grid”, “array”, “BGA”, “pin”, “socket”, or “connector” in Norskov.

The rule under 35 U.S.C. §102 is well settled that “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). MPEP §2131.

Norskov fails to disclose all of the structural elements recited in independent claims 1, 9, 17, and 28. For example, Norskov fails to disclose a “grid array”, a “grid array arrangement”, or “grid array connectors”. For the above reasons, independent claims 1, 9, 17, and 28 should be found to be allowable over Norskov, and Applicant respectfully requests that the rejection of independent claims 1, 9, 17, and 28 under 35 U.S.C. §102(e) as anticipated by Norskov be withdrawn.

Claims 2-8, 10-16, 18-27, and 29-42, which depend directly or indirectly from independent claims 1, 9, 17, and 28, respectively, and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

Rejection of Claims 43-57 Under 35 U.S.C. §102(e)
as Anticipated by Davidson

Claims 43-57 were rejected under 35 U.S.C. §102(e) as being anticipated by Davidson (U.S. 6,400,576). Applicant does not admit that Davidson is prior art and reserves the right to swear behind Davidson as provided for under 37 C.F.R. §1.131.

Davidson discloses a ball-grid-array (BGA) or pin-grid-array (PGA) package 10 (FIG. 2) mountable on a PCB 130. One or more pairs of vias 90-4, 90-5 are used to connect corresponding terminals of a bypass capacitor 190 located in a recess within the package footprint. Vias 90-4 and 90-5 are coupled to respective LGA mounting pads 100-4 and 100-5 (FIG. 2, col. 1, lines 50-52). In turn, mounting pads 100-4 and 100-5 are part of the group of mounting pads 100-1, 100-4, 100-5, and 100-10 on the lower surface of LGA 40 (col. 1, lines 50-52). These mounting pads make contact with corresponding LGA socket contacts 140-1, 140-4, 140-5, and 140-10 on the LGA socket 120 (col. 2, lines 10-14). It will be noted that in Davidson no mounting pads 100-1, 100-4, 100-5, and 100-10 are described or shown as being of greater cross-sectional area or as having greater current-carrying capacity than the others.

Davidson fails to disclose all of the structural elements recited in independent claim 43. For example, Davidson fails to disclose “a plurality of shunts electrically and physically coupled between corresponding ones of the first and second plurality of conductive patterns, wherein individual ones of the plurality of shunts have a cross-sectional area and a current-carrying capacity greater than that of any one of the plurality of connectors”. The vias 90-4 and 90-5, which terminate in mounting pads 100-4 and 100-5 in Davidson are not described as having any greater cross-sectional area or current-carrying capacity than the other vias 90-1 and 90-10, which terminate in mounting pads 100-1 and 100-10, respectively.

For the above reasons, independent claim 43 should be found to be allowable over Davidson, and Applicant respectfully requests that the rejection of independent claim 43 under 35 U.S.C. §102(e) as anticipated by Davidson be withdrawn.

Claims 44-57, as amended, which depend directly from independent claim 43, and incorporate all of the limitations therein, are also asserted to be allowable for the reasons presented above.

Rejection of Claim 58 under 35 U.S.C. §103(a)
as Unpatentable over Davidson in view of Blasi

Claim 58 was rejected under 35 U.S.C. §103(a) as being unpatentable over Davidson in view of Blasi (U.S. 5,973,928).

Davidson was discussed earlier.

Blasi discloses a chip substrate 20 (FIG. 2A) having pins 23 (FIG. 2B) that may be arranged in an array (FIG. 3B) and connected to a PCB 45 (FIG. 4).

To establish a *prima facie* case of obviousness under 35 U.S.C. §103, the prior art reference (or references when combined) must teach or suggest every limitation of the claim. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA, 1974). MPEP §2143.

The asserted combination of Davidson in view of Blasi fails to teach or suggest all of the claim limitations present in independent claim 43 or in claim 58 dependent thereon, so a *prima facie* case of obviousness has not been established. As asserted above, Davidson fails to disclose “a plurality of shunts electrically and physically coupled between corresponding ones of the first and second plurality of conductive patterns, wherein individual ones of the plurality of shunts have a cross-sectional area and a current-carrying capacity greater than that of any one of the plurality of connectors”.

Nor does Blasi disclose the above-mentioned limitation. Blasi appears to disclose only pins and no shunts whatsoever.

For the above reasons, claim 58 should be found to be allowable over any combination of Davidson and Blasi, and Applicant respectfully requests that the rejection of claim 58 under 35 U.S.C. §103(a) as being unpatentable over Davidson in view of Blasi should be withdrawn.

Additional Elements and Limitations

Applicant considers additional elements and limitations of claims 1-58 to further distinguish over the cited references, and Applicant reserves the right to present arguments to this effect at a later date.

Conclusion

Applicant respectfully submits that claims 1-58 are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, Walter W. Nielsen (located in Phoenix, Arizona) at (602) 298-8920, or the below-signed attorney (located in Minneapolis, Minnesota) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

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Date

June 15, 2004

By

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 15th day of June 2004.

KACIA LEE

Name

Kacia Lee

Signature